

Status and perspectives of agricultural animal genetic resources (AAGR) conservation in the Kyrgyz Republic

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Introduction

The live stock-breeding from time immemorial made the main kind of activity and a basis of Kyrgyz life. Nomadic way of Kyrgyz people demanded, that animals have been adapted to severe extreme mountain conditions, differed stability to illnesses and endurance. These valuable qualities of animals continue to play the major role during modern time. Agricultural animal genetic resources (AAGR) – one of the most valuable and, in strategic terms, the most important treasure of the country, along with plant genetic resources, natural resources and gold reserve. The Kyrgyz Republic has local animal species and breeds, and their use makes the production basis for food and raw materials for the industry and the export. Meanwhile, animal species and breeds improvement, appropriate management of their conservation and use might increase their contribution to address food, economic and ecological matters with a view to raise human living standards.

It should be noted that AAGR (Agricultural Animals Genetic Resources) improvement and use activities were on appropriate level in Soviet times and sufficient funds were allocated for these purposes from Moscow. The collapse of United Soviet Socialist Republics (USSR) led to destruction in the Agricultural Animals Genetic Resources (AAGR) system. And, with acquiring of its sovereignty (31 August 1991) the Kyrgyz Republic has to reconstruct and put in right track all Agricultural Animals Genetic Resources (AAGR) activities at its own efforts.

Upon participation in the SoW-AnGR meetings in Moscow, Caunas and Tashkent, representatives of the agro-industrial complex, a national coordination committee was set and a National Coordinator was nominated to collect data and prepare a country Agricultural Animals Genetic Resources (AAGR) report. As a result of the activities undertaken this report was produced, discussed by the committee, amended in light of comments and recommendations and by the national commission.

The basic purposes of the countries report are:

1. Studying an existing condition and use of agricultural animals genetic resources (the answer to a question « where we are? »).
2. Revealing and assessment of perspective national priorities in Agricultural Animals Genetic Resources (AAGR) conservation and development, opportunities of management conservation, use and development of Agricultural Animals Genetic Resources (AAGR) (the answer to a question « where we need to be? »).
3. Action trends identification on achievement of the purpose #2 (the answer to a question «what ways to reach and achieve that place where we need to be? »).

According to the purposes and recommendations stated in the Educational package on SoW-AnGR, kindly given by FAO of the United Nations, the structure of the report consists of introduction, 4 sections in which contents, in order to prevent a heap and excessive increase in material volume, the most important general provisions, conclusions and list of sources (bibliography) are only included.

Section 1 The Evaluation of agricultural biodiversity status in the livestock sector

1.1 Review of production and biodiversity animals used in the systems.

Last years in Kyrgyzstan reforming agrarian sector of the country is actively implemented. These reforms consist in introduction of private property on land, decentralization of management and price policy, freedom in profitable production choice and sale, creation of the land market, organization of cooperative societies. Over 253 thousand farms (farmer enterprises), 719 cooperative societies, the insignificant amount of the advanced and modified state farms are formed during reforming of 449 large state farms and 163 enterprises. In 2002 over 90 % of agricultural production was produced in private sector. A share of agricultural production in gross domestic product (GDP) of the country is 35.6 %, a share of animal industries in gross domestic product (GDP) of agriculture is 42.5 %.

In view of necessity of separate parts connection organization for a uniform circuit "production - processing-trade-consumption" the bill «On rural cooperative societies », State program of agricultural cooperative movement development in the Kyrgyz Republic were drafted, alterations and amendments are introduced in the Tax code regarding an establishment of their separate taxation. During the period from the end of 2001 to present time republican scientific - practical conference with President participation in the south of the country, a workshop with the state supervising persons' participation, accepting the decisions, in the north of the country, local training seminars and workshops for experts, telebroadcasts and publications in mass-media on cooperative movement issues were held.

In most cases, all these economic entities are engaged both in agriculture and livestock-breeding industries. As a rule, in all private and peasant farms 3-4 species of cattle are ranched or bred, there are large horned livestock, sheep or goats, agricultural poultry, horses (especially in mountain regions) more often. In large cooperative and state farms basically 1-2 species of cattle are bred or ranched, and practically in all economic entities horses are used as working draft force. Camels are used rarely though in nomadic period their use was significant. From exotic animals the ostriches delivered by small number (consignment) from Russia, Germany, Kazakhstan recently are bred and used.

In 1990 in the republic it was totaled 10 million heads of sheep and goats, 1,2 million heads of cattle (neat), 312 thousand heads of horses, 393 thousand heads of pigs, 13,9 million heads of agricultural poultry. By the beginning of 2002 number of sheep and goats was reduced up to 3,73 million, cattle (neat)- by 986,1 thousand, horses - 371 thousand, pigs - 85,3 thousand heads and agricultural poultry - 3,25 million heads. Except for horses, all species of agricultural animals are noted with sharp reduction in livestock number though for the last 3-4 years cattle livestock was somehow stabilized and the tendency on increase was outlined. For example, cattle (neat) (LHL) increased on 1.9 %, sheep on 0.6 %, horses on 1.8 %, poultry on 12.1 %. Reduction in livestock in many respects has been connected to change and reformation of socioeconomic and industrial systems, during the early period of a transitive stage – to farmers inability to manage in the changed conditions, during the late period it has connected to economic calculation of profitableness of this or that branch of animal industries. Disorder of traditional commodity markets of cattle-breeding production, a disproportion of the prices between cattle-breeding production and the industrial goods have affected as well.

The most important livestock products in the republic are food products - milk, meat (mutton, beef, horseflesh, yaks' meat), delicacy and gourmet internal organs and eggs, for own need sale. In 2002 production of all kinds of meat has achieved 355.4 thousand tons, milk - 1 million 173 thousand tons, eggs - 243 million units. Mare milk when it is fresh and processed (kumys), goat milk, goose fat are applied and used as recovery means. Raw products of animals use are wool, down, leather, bone flour. Other products and services of animals use are manure as fertilizer, casings (dried up manure) as fuel, as a vehicle, draft force, pack animals, in horseracing competitions.

The government recognizes activity on improvement Agricultural Animals Genetic Resource (AAGR) as strategically important for the country and stimulates it by passing and adopting of the necessary normative legal acts and statutory, insignificant, by virtue of budgetary financing limitation. Farmers, authorities, society as a whole are well informed on the above-named products and the services received due to animals use. At first, thanks to relatively advanced information network and consulting services, secondly, livestock (cattle-breeding) - historically traditionally national type of Kyrgyz people activity as former nomads. Therefore, the knowledge and awareness on products and services of livestock (cattle-

breeding) are characteristic for the society as a whole. Farmers of other nationalities (Russian, Uzbeks, Dungans, Korean) by virtue of agricultural orientation activity are less informed.

Public sector is represented only by state livestock breeding and horse-breeding (stud) farms in which the best breeding animals are concentrated. Head of livestock in public sector is insignificant, and constitutes only 1,3-3,7 %. Collective possession is represented by agricultural co-operatives, associations of peasant farms, joint-stock companies, etc. In these economical entities 17-19 % of all livestock are concentrated. The basic head of livestock cattle is in private (farmers) both in peasant farms and in personal farmstead.

In livestock of the country sheep breeding historically and economically occupies a leading position. About 30 % from total amount of produced meat takes mutton. It is caused by presence of about 9 million hectares of high-mountainous natural pastures on which sheep grazing does not demand significant expenses. Therefore mutton and wool production is rather cheap and has constant and increasing seller's market. In high-mountainous areas (Narynskaya, Issyk-Kulskaya, Talasskaya) sheep breeding represents unique profitable production. So, in average one year expenses on keeping of 1000 ewes heads of fine-fleeced breeds accounts roughly 782 thousand soms, income - 1560 thousand soms, net profit - 778 thousand soms.

Horse breeding, goat breeding, yak breeding are also economically effective, first of all because of stable increase of demand, prices on their production, and almost all-the-year-round pasturable keeping with the minimal expenses. So, the average income on goat breeding accounts 600-700 soms on one head, the gross revenue (income) from producing of all goat breeding production in the country is 300-350 million soms at profitability of 35-40 %. Economic efficiency of yaks breeding is very high. On this parameter no other species of agricultural animals can compete with yaks. As much as possible adapted to natural high-mountainous conditions, yaks use pastures and do not demand essential expenses.

Cattle (neat) is the most widespread species of cattle, which is kept by all types of economic entities on village nearby land plots. Concerning efficiency or productivity the most effective are co-operative farms having big daily and mid-annual milk yields. So, in agricultural co-operatives "Machinery Experimental Station" ("Mashinoispytatelnaya Stanciya") (MES) milk yields achieve 5649 kg / year, "Branch" ("Vetka") - 5020 kg / year (in breeding farms - 3000-4000 kg / year). Besides they have the greatest income of calves' sale. Thereof they take the greatest income from keeping cattle (neat) (CtI). However expenses or charges on forages in these economic entities are essentially higher, than in the others, as a result of it on a profitability parameter on a head of cattle and according to the gross profit on one worker they concede (though insignificantly) to farms. Thus, any of considered types of economic entities have no significantly the best parameters of efficiency in keeping cattle (neat) (CtI). There is a similar picture on efficiency of economic entities types and on sheep breeding, horse breeding, and goat breeding.

1.2 Assessment of Agricultural Animals biodiversity conservation status

The increased needs of the population for livestock products and development of domestic processing industry have stimulated breeding process of the whole livestock branch. Thus work in this direction is adjusted by recommendations of the Biological Diversity Convention which the republic ratified on August, 6, 1996. In the near future the Biodiversity Conservation Strategy of the Kyrgyz Republic will be accepted by the Government. As a result of it, on the basis of transforming crossing of local native animals with imported (brought in) cultural breeds, domestic highly productive breeds of agricultural animals were created, such as three breeds of sheep, two breeds of cattle, two breeds of goats, new breed of horses, breed of hens. (the characteristic of breeds is resulted in paragraph 1.3). The cultural breeds of sheep created in the republic are productive enough, well adapted to local conditions and are proof (steady) against various diseases. Besides delivery of males-breeders and frozen semen (sperm) of various breeds of sheep, goats, cattle and horses are regularly imported into the republic for local cattle breeds improvement as well as pigs and agricultural poultry for domestic breeding. Thus, rams from Russia, Australia, Argentina, bulls - breeders of black - motley both brown breeds and their semen from Austria, the USA, Holland, Switzerland, Russia, bulls - breeders semen of meat breeds - sharole, Aberdeen-Angus, kiyan, galovei, stallions of thoroughbred riding, Don, trotter breeds from Russia and England were imported (delivered) into the republic for crossing with local sheep breeds. In pig-breeding (pigstry) big white breed, North Caucasian, Landrace, German Noble (generous) were delivered into the republic for domestic breeding. In poultry farming - American plemutrocs, leghons, kornish, Kuchino, etc.

Variety of breeds

Species / breeds	Number on 01.01.2002.
CATTLE TOTAL	986.1 thousand
Alatauskaya and cross-breeds (hybrids)	824 thousand
Aulieatinskaya	70 thousand
Black-motley	74.8 thousand
Yaks	17.3 thousand
SHEEP TOTAL	3,73 million.
Kyrgyz fine-fleeced	1.0 million
Tyanshanskaya semi- fine-fleeced	200 thousand.
Alai semi-coarse-haired	20 thousand
Local and refined (improved) coarse-haired	600 thousand
Australian merino	1 thousand
Cross breed (hybrids)	1.4 million
GOATS TOTAL	500 thousand.
Kyrgyz downy	90 thousand.
Kyrgyz woolen	60 thousand.
Dairy type	2 thousand.
Local and cross breeds (hybrids)	348 thousand
HORSES	371 thousand.
Newkyrgyz	285.0 thousand.
Local Kyrgyz	78.3 thousand.
Oryol and Russian trotters	6.5 thousand.
Thoroughbred riding and cross breeds (hybrids)	1.2 thousand.
PIGS	85.3 thousand
Big white	4.5 thousand
Landrace	1.5 thousand.
German noble	1 thousand
Cross breeds	78,3 thousand.
HENS	. 2,88 million.
Leghorns and its cross-breeds	200 thousand.
Kornish	150 thousand.
Kyrgyz local	80 thousand.
Kuchinskaya	15 thousand
Other breeds and cross-breeds	2,43 million.
DUCKS	
Pekinese	20,3 thousand
GEESE	5 thousand.
TURKEYS	340 thousand.

Before 1990, a share of Kyrgyz fine-fleeced sheep achieved 90 % from all sheep livestock in the republic, and sheep number of this breed reached 9 million heads. It has been caused by the high prices on fine merino wool and stable sale market on this production. Number of Tyan-Shan semi- fine-fleeced sheep breeds reached 700 thousand heads, Alai - 200 thousand heads. Other part of sheep, about 100

thousand heads, fell at a share of local fat-tail and crossbred sheep. Collapse of the Soviet Union and former socioeconomic system has led to complete change of a structural ratio (proportion) of breeds. Thus, the number of fine-fleeced sheep was 9 times reduced, semi-fine-fleeced sheep - 3-3.5 times, Alai sheep 9-10 times. In conditions of small farmer and household managing where the overall objective pursues satisfaction of the current domestic needs for meat, more than others came coarse-haired fat-tail sheep. And it is not casual that their number has considerably increased. The important reason caused sharp reduction of fine-fleeced and semi-fine-fleeced sheep, was prices and demand falling on fine and semi-fine wool produced in the republic. Nevertheless, in the republic there are plenty state and the private enterprises steadily focused on fine and crossbred wool produced. Besides fine-fleeced, and in particular semi-fine-fleeced sheep, produce high quality meat that provides additional benefit to commodity producers. Significant growth of coarse-haired sheep livestock is caused by their high viability and unpretentiousness to breeding as well as fat tail presence (fat tail bacon), which is traditionally used in national cuisine. Last years local fat tail sheep are improved with rams of Gissar and Edilbaev breeds, which were delivered into the republic from the adjoining countries - Uzbekistan, Tajikistan, Kazakhstan. These breeds differ in higher live weight and in big size of fat tail. (For example. Diversified cooperative society "Aikol ". Contains 1.5 thousand of yaks, 500 dams from them rents 30 thousand hectares of pastures. In 2001 the status of breeding factory is given. Yaks' breeding is the most economical, expenses for feeding are absent, yaks are pastured all-the-year-round on high-mountainous pastures, the expenses or charges are required only on veterinary service and salary for shepherds. The livestock of yaks has been doubled for 3 years. Since 1997 it got the status of stud-farm. There are 700 heads of horses, not considering the yield. This cooperative is engaged in nurturing of thoroughbred English breeds and trotters - amblers. The price of a good racer reaches 10 thousand dollars (\$). The Newkyrgyz breed of horses is bred as well, giving 75 % of young growth on 100 dams, adapted to severe mountain conditions and used as a hardy vehicle. Horse breeding brings to cooperative society about 15 % of the aggregate profit. Sheep breeders cross fine-fleeced Kyrgyz breed of sheep with Gissar, the crossed Meat - fat breed of sheep of 3-4 generations is already received помещная. It is offered to name it officially as a new Aikolskaya group of sheep. It is adapted to severe conditions of mountains, an output of young growth is of 100 %, it is steady against diseases, small-cost, has a stable demand at the population. For 2002 the profitability of cooperative society has made 47.5 %, the net profit made 7.8 million soms. In 1998 within the framework of the "Sheep Breeding Development" project, 290 rams and 400 dams (females) of "Australian Merino" breeds of three types - "Strong", "Medium" and "Fine" has been delivered to Kyrgyzstan from Australia on credit funds of the World Bank. Present time in the republic it is totaled more than 700 heads of Australian thoroughbred and about 40 thousand crossbred dams. The principle objective of Austrian Merino delivery was improvement of wooly characteristics of local merino sheep. Now the sizes of sheep-breeding herds majority of the average farmers and peasants consist of 20-30 heads, for comparison, in conditions of collective-state-farm system the sizes of herds consist of 30-40 thousand heads of sheep. For last years some increase in goats livestock was noted. The increase in local population demand is caused by high goat productiveness and their unpretentiousness. Unfortunately, as a whole, the number of low-productive native and crossbred goats prevails above cultural.

The difficult situation has been developed and in other branches of livestock breeding. In spite of the fact that reduction of cattle number is insignificant, their productive and breeding qualities, however, have strongly decreased. With the transition to market economy and small-scale production, cows became almost an only source of incomes for the majority of individual families in flat rural and suburban zones. As before, in cattle breeding the preference is given to Alatauskaya (Alatau) brown breed of cattle as the most adapted to local conditions, therefore according to the number, this breed occupies a leading position, including their hybrids. Black - motley cattle is successfully bred, especially in zones of intensive agriculture of Chui and Talas areas which, despite of the responsiveness to feeding and keeping conditions, remains to more productive, rather than Alatauskaya (Alatau) brown cattle. And those owners, who have a good forage reserve, prefer to breed black - motley cattle. The yaks' livestock was strongly reduced. Number of this unique, half-wild cattle till 1990 reached 90 thousand heads, i.e. reduction observed more than in 5 times.

Despite of the precocity and intensity, the pigs' and agricultural poultry livestock was considerably reduced. Due to this in many respects the production curtailment of the fodder grain in the republic has affected being the basic forage for these animals. The pigs' livestock is kept basically in zones of intensive agriculture of Chui valley. Unfortunately, the breeding base on pigs' breeding (pigstry) was completely

liquidated. As before, priorities in breeding are given to big white breed of pigs though since some time pigs of German noble breed are delivered into the republic.

In the conditions of transitional period when the large state enterprises, by virtue of the various reasons, were found ineffective, poultry farms appeared among them which unprofitable production has led to strong reduction of hens' livestock, in particular of egg direction. However, for the last years this branch will gradually be reanimated. Hens breeds of egg direction are delivered from Russia, Kazakhstan, Chinese People's Republic and other countries, activity of poultry enterprises gradually revives, that links with increase in demand and the prices for food and incubatory eggs. Ducks, and in particular geese and индейки, are bred mainly in personal farmsteads, for satisfaction of internal needs in meat.

1.3 Assessment of Agricultural Animals Genetic Resources use status

Basic characteristics of animal breeds in the republic

Sheep

Kyrgyz fine-fleeced breed

Kyrgyz fine-fleeced breed is the basic in the republic occupying in recent times more than 90% according to the number and production. Present time this breed occupies about 30 % from the whole sheep livestock. Kyrgyz fine-fleeced is bred by complex reproductive crossing of local fat tail coarse-haired dams with rams of fine-fleeced breeds: New Caucasian merino, Siberian Rambulye, Wurttemberg and precos. The breed was probated in 1956. After the improvement introduction crossing was carried out with Groznenskaya, Stavropol breeds and since 1971 with Australian merino. Kyrgyz sheep of fine-fleeced breeds possess good adaptable characteristics to the conditions of high-mountainous pasturable areas and have high-wooly efficiency. Wool clip (shear) in the best breeding herds on the average reaches 4,2-4,8 kg in the original and 2,3-2,5 kg in washed form, dams' live weight achieves 55-56 kg, productivity is 110-115 lambs on 100 dams. This breed is widespread on the whole territory of Kyrgyzstan. In various regions of the republic there are 5 factory herds, in each of which of them has 5-6 factory lines.

Tyanshanskaya semi-fine-fleeced breed of sheep

Tyanshanskaya semi-fine-fleeced breed of meat-wooly sheep was bred in the result of complex reproductive crossing of precos-fat-tail dams with rams of Lincoln breed of English reproduction. It was authorized in 1956 as independent factory breed. Sheep of Tyanshanskaya breed produce excellent quality meat and valuable crossbred wool. Distinctive features of tyanshan sheep are their high live weight, early growth (precocity), good wool clip and excellent fitness to high mountains conditions. The big size, sturdy and strong constitution, proportionality of the constitution, well developed skeleton and muscles are their characteristics. The average alive weight of rams is 105-110 kg, dams - 60-65 kg, and lambs weight is - 32-34 kg. Wool clip in original is 3,5-4,0 kg, and average dams' productivity upon 100 dams is 110-115 lambs. Alai sheep breed with total number around 200 thousand heads is distributed in Naryn and Jalal-Abad oblasts. There are 4 factory lines.

Alai semi-coarse-haired sheep breed

Alai breed of meet-fat-wooly sheep was bred during the long reproductive crossing process of coarse-haired dams with precos and saradja breeds. In 1981 it has been approved as independent breed. Alai sheep is bred in meat, bacon and qualitative semi-coarse-haired carpet wool purpose. Sheep of Alai breed optimally combine high meat-fat-wooly productivity, early growth, a strong constitution and adaptedness to extreme conditions of high mountains. Nature characteristics of Alai sheep, fixed genetically, are white colour, good weight of the body, well-defined meat forms and correct form of a medium-sized fat tail. The average live weight of rams - breeders is 105 kg, dams - 62 kg, lambs - 32-33 kg. About 20 thousand heads of Alai sheep breed is spread in Osh, Jalal-Abad and Chui oblasts.

Kyrgyz coarse-haired fat-tail sheep

Sheep breeding of Kyrgyzstan at the beginning of XX century was limited exclusively to breeding only local fat-tail sheep with coarse-haired (rough) wool. Kyrgyz coarse-haired fat-tail sheep is a unique native breed in the republic. Sheep have strong constitution, satisfactory meat - fat qualities, precocious (early growth), well fatten, steady against various diseases and easily overcome significant distances. They have large enough size of body, fat tail of round medium-size shape. The average dams' live weight is 55-60 kg, rams' - 70-80 kg. Colour mainly is brown, red, and partly black. Annual wool clip is 1,8-2,0 kg. Last years this breed was crossed to rams of Gissar and Edilbaev breeds, with the purpose to increase

live weight and fat tail. It is spread on the whole territory of Kyrgyzstan; the aggregate number is about 600 thousand heads.

Australian merino

Rams of Australian merino breed had been delivered to Kyrgyzstan since 1971 and widely used in crossing with Kyrgyz fine-fleeced sheep as the result Kyrgyz fine-fleeced sheep had increased their woolly productivity and improved their technological wool characteristics. In 1998, 290 heads of rams and 400 heads of ewes of Australian merino breeds were delivered from Australia that well adapted for local conditions. The autumn live weight of import rams in 1999 was 83.5 kg, in 2002 - over 86 kg. Average wool clip, correspondingly, is 8.81 and over 9 kg. Now in the republic there are more than 700 thoroughbred dams that in cleanliness are kept in 3 breeding herds in various zones of the republic - Talas, Chui and Naryn. The average live weight of Australian dams is 55-60 kg, and their wool clip in the original - 4,7-5,0 kg. The comparative analysis of reproductive properties of Australian and local dams has shown, that during 3 years on the average six lambs more were received more from import dams counting upon 100 dams than from local.

Other populations

There are also populations of crossbreeding sheep, received as a result of unsystematic crossing of coarse-haired rams with fine-fleeced and semi-fine-fleeced dams. Practice shows, that from such sheep it is impossible to receive neither qualitative wool, nor meat or fat (suet). Now such type of sheep submits the majority of sheep with color wool in the republic. However there are herds of sheep where the homogeneous livestock of fat tail sheep with good fat (suet) – meat qualities appeared as a result of absorbing crossing method of fine-fleeced dams with gissar rams.

Goats

The Kyrgyz downy goats breed

The given breed is bred by crossing of native Kyrgyz goats with Pridonskaya and, partially, with Angora breeds. Breeding animals in fleece wool, on the most part of their body, have in prevalence downy fibers, which contents or mass (according to the weight) are 60-75 % and more. Downy fibers, on the most part of the body, are longer than barb fibers. Length of down of adult goats and dams is 8-10 sm, diameter of fibers is 18-21 microns. Down mainly is light grey, dark grey, and white. The goats – breeders produce on the average 600-700 grams of down, and from breeding dams there are 450-500 grams. (He-) Goats are rather large in size and have good meat characteristics. The live weight of (he-) goats in average is 60-65 kg, and dams' is 36-38 kg. Dams' productivity in average is 125-130 %. Downy goats are generally bred in Osh and Batken oblasts. Number of downy goats is about 150 thousand heads.

Kyrgyz wooly goat breed

Goats of Kyrgyz wooly breed have strong constitution, differ with high fitness and adoptability to the mountain - pasturable keeping and are characterized by good productive qualities. These goats were bred by reproductive crossing of the hybrids received from transforming crossing of native Kyrgyz goats with the Angora breed. According to the key parameters the wool of Kyrgyz goats approaches to the wool of the Angora type - mohair. Goats - breeders give on the average 2,6-2,8 kg of wool, dams give 1,5-2,0 kg. The length of wool in average is 20 sm, and an output of wool is 80-86 %. The average live weight of goats - breeders is equal to 56-58 kg, and dams - 35-37 kg. Reproductive qualities of wooly goats is satisfactory - 105-115 %. Kyrgyz wooly goats well use stony and semi-deserted pastures, they are mainly distributed in Jalal-Abad oblast. Their number is about 100 thousand heads.

Other breeds:

Dairy goats: their livestock is small (about 1000 heads of dams) and basically is represented by hybrids of zaaninskaya, toggenburskaya, and etc. dairy breeds. However, the local population has a great demand on dairy goats as goat milk is used as a dietary product. These animals are remarkable for their productivity and precocity.

Local native and hybrid goats are bred in the whole territory of the republic, and their number is more than 50 % from the whole livestock of goats. Native goats are perfectly adapted to local conditions and serve mainly for meat and leather (goatskin) production.

Cattle

Alatau (Alatauskaya) breed

Alatau breed is the basic breed in the republic and is bred during the long period by reproductive crossing of local Kyrgyz cattle with shwizc and the Kostroma breeds. As an independent breed, it was authorized in 1950. Animals of this breed are very close with brown shwizc, have a little rather short body, a deep breast and lower legs position. The cow's udder capacity is well developed and a daily yield of milk is 10-15 kg. Due to the productive and adaptable qualities to conditions of hot dry summer and severe winter, breed has found wide use in the republic and out of it.

Aulieatanskaya breed

Aulieatanskaya breed of cattle has been created in 1974 by crossing local cattle with bulls of the Dutch breed, and distributed mainly in Talas areas. For today the Number is about 70 thousand heads. Color is black - motley.

Kyrgyz black - motley cattle

The Kyrgyz black - motley cattle is represented by two subpopulations - Alatau-Holstein and Aulieatino-Holstein hybrids of different generations. Now number of breed is about 100 thousand heads, and the breed is spread basically in Chui and Talas oblasts of the republic.

Yaks

Yaks are high-mountainous animals, they well adapt and transfer low temperatures. Yaks are very steady against extreme conditions, which are typical for mountain regions of the republic. The basic yaks' production is meat. Yaks meat is considered as a ecologically clean product, and according to the quantity of dry substance and crude protein it surpasses meat of other cattle. The live weight of yaks-cows varies from 260 up to 320 kg, bulls - 380-400 kg. Yaks are spread (distributed) practically on the whole high-mountainous territory of the republic. Now yaks' number in the republic is about 20 thousand heads.

Horses

New Kyrgyz horses breed

New Kyrgyz horses breed has been approbated in 1954 by crossing of local Kyrgyz horses with the Don breed. Horses of New Kyrgyz breed are large enough, the live weight of stallions in average is 450-460 kg, and height in withers is 155 sm, mares correspondingly - 440-450 kg and 151 sm. These horses are used for horses-flesh meat and mare milk, riding, classical and national kinds of equestrian sport. New Kyrgyz horses breed is spread (distributed) on the whole territory of the republic; their number is about 200 thousand heads.

Local Kyrgyz horse

Local horses were kept practically in all regions of the republic, though their number is small. In mountain conditions they are indispensable or irreplaceable. Despite of small size, these animals are hardy, unpretentious, viable, and steady against various diseases and hypoxia.

Other breeds

Don, Oryol and Russian trotter breeds of horses are bred in the republic in a small amount. The small population of these horses (100-150 heads) is kept in Issyk-Kul and Chui oblasts.

Pigs

In separate economical entities or farms of the republic (Chui oblast) pigs basically are of big white breed which livestock now is 4,5 thousand heads. The average live weight of boars is 300-350 kg, sows - 240-260 kg. Average productivity is 8-9 pigs for one farrow. Sows milkness is 35-45 kg and more. They are of meat type, precocious or of early growing.

Besides German generous (noble) pigs breed of fat-meat trend has been delivered from Germany. It is bred in separate private enterprises. It possesses the best precocity, with high forage remuneration; the daily average growth is 600-650 gr. Landrace breed is bred for meat (bacon) purposes as well.

Hens

Leghorn

Breed of leghorn hens is the basic breed in the republic on egg production. This breed is represented by various crosses - Jaffa, Rhodonite, White Loman, Byelorussia, Alatau which were delivered to the republic from various countries - Russia, Israel, Belarus, Kazakhstan, etc. Number of leghorn hens breed is about 200 thousand heads.

The Kyrgyz breed of hens

The given breed of hens was approved in 1995 and it is bred for meat - egg purposes. Number of Kyrgyz breed hens is about 80 thousand heads. Breed is spread on the whole territory of the republic.

Kuchino breed

This breed was delivered to the republic from Russia. Its number is insignificant. It is bred in small-scale enterprises and farms of Chui oblast.

Ducks

The Peking (Pekinese) breed (Cross Medeo (Meadow) was delivered from Kazakhstan. Breed is spread (distributed) on the whole territory of Kyrgyzstan.

1.4 Identification of the priority objects in the field of Agricultural Animals Genetic Resources (AAGR) conservation and use

The certain measures in the country are taken in view of the collected problems in breeding animal industries decision.

The Kyrgyz Association of sheep breeders, "Merino" Fund on fine-fleeced sheep breeding, "Taitory" Federation on development of horse breeding and equestrian sport, public association on horse breeding and horses test and probation, "Altyn-Taka " jockey club and others were created.

Private company "Central - Asian preserves (breeding service) LTD" carries out significant work on Agricultural Animal Genetic Resources (AAGR) development. The company was created with the support of Kyrgyz-Swiss agrarian project. 18 cattle breeding economic entities (farms) implement program realization of genetic improvement of cattle quality. All cows are registered in the computer-breeding book; large-scale selection-breeding work with the use of global technologies started; the European cattle dehorning system, the Israeli system of animals identification were introduced. In the specified economical entities (farms) the genetic material - sperm of the best world bulls - breeders from Switzerland is used. Used breeds are the following: brown shwizc and golshtinskaya. Breeds are strictly zoned depending on definite geographical and economic conditions. For example, in a mountain zone of Issyk-Kul oblast of Ak-Sui rayon the strong type of brown cattle, bred in the high-mountainous Alps is used for improvement of local cattle. Dairy type of brown cattle is used in for dairy zones of Chui valley. There are 55 centers of artificial insemination on the territory of the republic in five oblasts - Chui, Issyk-Kul, Talas, Jalal-Abad and Osh that use world's genetics. The insufficient quantity and absence of artificial insemination centers in the remote regions of republic could be explained with vessels (Dewar) absence for sperm storage and transportation, high cost of liquid nitrogen and its absence in these regions that considerably breaks development of private centers on artificial insemination. Attraction of investments is necessary for creation of additional centers on artificial insemination. Present time in "Elite" Joint-stock company sperm of highly productive breeding bulls – breeders is stored in the amount of 400318 dozes. Liquid nitrogen is made at the purchased factory, the second factory in the south of the country, which is purchased in China, is of problem, it does not function and there are no means for its repair. Cost of both factories is about 130 thousand US dollars.

Since 1999, national exhibitions - auctions of breeding cattle, sheep and goats, bred in the republic are annually hold with attraction of farmers, peasant farms of all oblasts of the country. The purpose of their holding is to demonstrate and sell highly productive thoroughbred breeding sheep and goats, increase the awareness of farmers on breeds' opportunities. The matter is that many farmers do not know what animal breeds they should use for breeding, in what natural-climatic zones this or that breed is of perspective, and the farmers, engaged in thoroughbred animal breeding have no opportunity to show available potential to compare similar breeds of other farmers.

Unfortunately, despite of the carried out certain measures, in breeding animal industries of the republic there are a number of unresolved problems.

All sheep-breeding factories have the big debts under various loans, since 1992-1993 this number equals to about 40 mln. soms. Because of budgetary financing lack breeding plants are forced to reduce breeding livestock. So, 1928 heads of cattle, including 825 cows were on the state breeding plants at the begging of 1998, and for January 1, 2003 there were correspondingly 336 and 143 heads. 720 heads of horses, including 251 brood-mares were in three horse-breeding centers on January 1, 1998 and current year there was 331 head of breeding horses, including 133 mares. The small sizes of breeding factories after reforming and insignificant production do not allow to pay off debts, which have been left after former large and powerful economical entities. Practically the Law passed in 1992 "On breeding business in breeding livestock" is not complied and accomplished, in particular article 4 of the Law on granting tax allowance (privileges) for loans and material technical resources.

The other problem is lack of land ground on breeding factories. Today they have only more than 6 % from their initial area and each state-breeding factory (plant) has from 50 up to 120 hectares of arable lands on which it is possible to keep only 300-600 heads of sheep. The herd with such amount of sheep cannot seriously influence on genetic improvement of other herds. There is a similar situation with other state breeding factories (plants) on other species of Agricultural animals (AA). The situation is aggravated also with that all their liquid basic and circulation assets have been sold out. From liquid means there is only a small livestock of breeding sheep, which under the pretext of duties repayment is under the threat of sale and final loss. Under the decision of these problems the Law of the Kyrgyz Republic "On modification and amending of some legislative acts of the Kyrgyz Republic" was submitted for consideration where granting for long-term rent, not less than 10 years, of arable lands from Redistribution Fund of farmland to breeding farms has been stipulated, in priority on preferential terms in the volumes providing their planned production program on breeding business, with a rent of land tax rate.

Present time the attestation of the breeding subjects engaged in animals breeding is carried out in accordance with Regulations on the status of breeding factories and farms engaged in livestock breeding business. The attestation results show that last three years, during the period between last attestation, there were qualitative changes to the best side, especially in private breeding farms where they began cattle breeding activities more purposefully, their professional level has increased as well. They began to communicate with other regions more, to exchange their operational experience, breeding livestock; more often participate in exhibitions, auctions, to consult breeding affair issues.

As practice shows, by virtue of the various reasons, thoroughbred breeding is hardly compatible with organizational system in conditions of small herds; therefore the number of various hybrids has considerably increased. As it is known, crossing of the animals having different trend (direction) of productivity seldom results in success, therefore the majority of such cross bred sheep is poorly productive. And, unfortunately, neither the state nor other organizations, for the present, have any sufficient opportunities for prevention of unsystematic pairing. Farms where there are 100 and more heads of sheep adhere to thoroughbred cultivation, as a rule.

Index selection in breeding livestock of the republic has not been used yet. The computer program of breeding registration was developed for sheep/goats with elements of index selection. But practically, this program has not worked yet. The genetic database exists as catalogues and breeding cards. The electronic database exists only in dairy cattle breeding which is conducted during last 3 years. Private breeding service company conducts this database. For the present this electronic base has captured only 3-4 % of all cattle livestock. Only male-breeders of the leading breeding factories are exposed to the genetic animal assessment and estimation according to their comparative estimation of breed quality. The estimation of animals at genetic markers level is suspended for the lack of means. Artificial insemination has found universal use and application in cattle breeding, sheep breeding and pig breeding. In other branches of animal industries - horse breeding, goat breeding and poultry farming, by virtue of the various reasons, artificial insemination has not found corresponding application and use. Laboratory researches on artificial insemination basically are directed on increase of frozen semen impregnation percentage. Works on embryos transplantation are carried out only in the laboratory conditions, without practical application and use.

Section 2. Analysis for livestock production demand shifts. Influence on future national Agricultural Animals Genetic Resources (AAGR) policy, strategy and programs

2.1 Review of past and present policy, strategy, programs and management methods in respect to Agricultural Animal Genetic Resources

By the beginning of 2003 there were totally 227 economical subjects in the republic that have received the status of breeding entity (farm). There were two (2) state breeding factories on Alatau cattle breeding, four (4) farmer breeding factories on alatau and golshтинofreez cattle breeds, five (5) factories on Kyrgyz fine-fleeced sheep breeding, one (1) factory on tyan-shan fine-fleeced sheep breeding, three (3) horse-breeding centers on new-kyrgyz horse breeding. On January 1, 2003 there were 138 heads of breeding sheep, 336 heads of cattle and 331 heads of horses on state breeding and horse-breeding centers of the republic. Despite of heavy financial difficulties, the state factories continue to be engaged in animals breeding, carry out the account of a genotype and productivity and carry out, not in big volume, breeding sale. In all these factories high-valued linear animals are conserved, homogeneous both heterogeneous selections of animal attributes on a complex is applied, the account of origins and productivity is carried out as well. Scientists - sheep breeders of scientific research institute of livestock, veterinary science, and pastures assist in scientific - methodical assistance to carry out selection breeding works.

For last years in the country a number of the political decisions directed on preservation and development of Agricultural Animal Genetic Resources is carried out. So, in 1996-2002 the Government of the country initiated "Sheep breeding development" project. The credit of 11 million US dollars was given by the World Bank, the Resolution "On meat stock-breeding development in Chui oblast" was approved, the Program of poultry farming development for 2000-2005 in the Kyrgyz Republic, the Concept of sheep breeding development for 2000-2003 in the Kyrgyz Republic were approved as well. The Resolution dated July 19, 2001 # 364 "On urgent measures for state breeding and semen farms (economic entities) improvement" was approved to support and preserve state breeding factories where prolongation duties for the budgetary loans, social insurances, electric power, use of irrigation water received earlier is stipulated. The Resolution of National Representatives Assembly of Jogorku Kenesh of the Kyrgyz Republic dated October, 8, 2002 D # № 528-11-13 "On the state support to horse breeding in preservation and development of new-kyrgyz horses breeds in the Kyrgyz Republic" was approved. The State program of horse breeding development in the Kyrgyz Republic for 2003-2010 was developed in the performance of the Parliament Resolution and approved by the of the Governmental Resolution on May 22, 2003 # 292. The same Resolution stipulates address financial support to state horse-breeding centers due to means of the republican budget for 2003 at a rate of 6.7 million soms.

Due to these measures, breeding sheep herds on Australian merino breeding, selection nucleus of new sheep breed - Kyrgyz mountain merino with washed wool clip of 2.3-2.4 kg, interbreeding types of crossbred tyan-shan breed with live weight 56-58 kg were bred, productive and breeding qualities of Kyrgyz downy and wooly goat breeds коз are improved. Third generation of new meat – fat sheep breed characterized by high growth energy was bred. The program of dairy and meat cattle breed creation was developed. Yaks breeding herds with average live weight of 283.9 kg, selection nucleus of created meat type of new-kyrgyz horses breeds were created, the breeding hens number was updated.

Now in horse breeding, there is overstocking of breeding horses because of the absence of infrastructure and especially foreign market. Expenses for breeding and preparation of breeding horses do not pay off by earnings from their realization. In this connection all stud-farms will have significant state financial support with the purpose of new-kyrgyz horse breed preservation representing national value, the uniform order of their export is established with obligatory pedigree belonging and their origin documents presentation.

2.2 Future demand and tendencies analysis

As it is already marked in paragraph 1.1, in 90th years sharp decrease in livestock number of cattle and birds was observed. Accordingly production of the basic livestock products of all breeds was reduced in comparison with 1990. In 1991 meat consumption did not exceed 48 kg a year per capita at norm of 81.8 kg, or in 1.7 times lower than requirements. Now this parameter is even lower. So, meat production is

reduced on 95,6 thousand tons (21 %), milk - on 12.1 thousand tons (1 %), eggs - on 470.8 million pieces (66 %), wool - on 27.4 thousand tons (70 %). For the last 2-3 years the livestock and its productivity were stabilized, and moreover there is a growth tendency. Cattle livestock has been increased for 1.9 % or on 18467 heads more, sheep on 0.6 % or 21217 heads, horses on 1.8 % or 6278 heads, birds on 12.1 % or on 393214 heads. Big growth of cattle in comparison with sheep can be explained by the connection with the creation of enterprises on processing milk farmers prefer to keep dairy cows which production has greater demand.

Certainly, it is a stabilization consequence of macroeconomic parameters of the country. At the same time, influence of tendencies of the population is observed as well. The population of the country on January 1, 2003 made up 5 million 12 thousand people, about 65 % of them is agricultural population. In 90th years the general increase in population began to decrease and by 2001 has reached 0.8 % on average for a year (in 80th years - 1.9 %), and in 1993 its value was negative. Since 2001 rates of population decrease has slowed down that speaks about some stabilization of demographic situation. One of the primary factors influencing demographic situation is population migration. Slowing down of economic development in 90th, higher parameters of unemployment and poverty in rural regions have increased rural migration, in particular, able-bodied population to cities, mostly to the capital of the country and Chui oblast. At the same time, recently a part from them, re-immigrated back to the villages having met insoluble economic problems in cities as well. During selective questioning, about 60 % of respondents from cattle-breeding Naryn oblast have named the reason of home returning, 20 % expected to receive the land and due to cheaper life to support family, the others have named motives of returning aspiration to help growing old parents, to develop own business, etc.

Other tendency which has influenced live stock-breeding is mass departure of the Russian-speaking population from the republic in 90th years. That has affected decrease in consumption of pork and, accordingly, population of pigs and decline of interest to their genetics. Local population by virtue of religious (Moslems) reasons and historical habits do not consume pork. Increasing monoethnization (monoethnics) of the local Asian population has increased loading on sheep breeding, as a result livestock of sheep have been decreased, including breeders, and accordingly, genetic resources of sheep breeding. Now, departure has been decreased in view of creation of favorable equal life conditions to the Russian-speaking population. Demand for pig-breeding production therefore has increased, that has pushed development of branch and attention to genetic resources.

Thus, synchronism, interference of positive and negative tendencies among the population and in livestock breeding is observed. That in appropriate way affects policy in relation to Agricultural Animal Genetic Resources (AAGR), strengthening or weakening attention to them.

The present level of livestock production is characterized by the following data.

Manufacture of cattle-breeding production according to cattle breeds for 2002.

	Milk, thousand tons		Meat, thousand tons		Eggs, million pieces		Wool, tons	
	In total	%	In total	%	In total	%	In total	%
Cattle	1172.9	100.0	100.1	50.1	-	-	-	-
Sheep	-	-	38.1	19.2	-	-	11099	95.7
Goats	-	-	5.7	2.8	-	-	496*	4.3
Horses	-	-	24.8	12.4	-	-	-	-
Pigs	-	-	25.7	12.9	-	-	-	-
Poultry	-	-	5.2	2.6	243.0	100	-	-
	1172.9	100.0	199.6	100	243.0	100	11595	100

* Wool and down

Practically all milk made in the republic falls at a share of cattle; milk made by goats is insignificant and in has not been taken into account. The meat production falls at cattle - (50,1 %), sheep and goats (22 % in aggregate) and also horses and pigs - 12,4 and 12,9 %. Meat unit weight of agricultural poultry is insignificant - 5,2 thousand tons. Eggs production mainly falls at a share of hens. Ducks, geese and turkeys are basically used for meat production. In republic the wool of all categories is produced - merino,

crossbred, semi-coarse-haired and coarse-haired as well as goat wool (mohair), goat coarse-haired (rough) wool and downy.

For supplying of increasing demand, food and raw safety of the republic in livestock products, national strategy of livestock-breeding assumes increase the number of livestock cattle up to the following parameters - sheep and goats up to 6,5-7 million heads, cattle livestock - 1,1 million heads, 350 thousand heads of horses, 350 thousand heads of pigs, 6 million heads of agricultural poultry. It will allow to provide full requirements of local population for the basic livestock products - meat, milk, eggs, and the domestic industry in raw material - wool, down, and leather. The basic quantity of raw production will be exported, mainly to China and Russia.

In view of the future demand in cattle breeding the tendency on increase in milk and meat-beef production is shown. In perspective wide breeding of alatau breeds and black - motley cattle for milk and meat production is provided, as well as development of cattle meat breeds of yaks for high-quality and cheap meat production. In sheep breeding for meat producing tyanshan semi-fine-fleeced breed will be widely used, improved fat-meat and local coarse-haired sheep and for wool production - Kyrgyz fine-fleeced improved by Australian merino will be widely used. Horse breeding development will receive productive, working-using and sports tendencies and in big breeding – meat tendency. Hens' breeds of eggs direction (tendency) – leghorn (including various crosses), Cornish, and others will be used for large industrial production. Local hens as well as ducks, geese and turkeys meat production will be used.

In reply to the tendency of demand increase in the export market for non-polluting and natural production in the republic the opportunities of organic (ecological) agriculture and feeding industry expansion are studied due to what it is possible to receive quality of live-stock production. The high quality certificate of meat production has come to light recently. So, in 1997 F.Mitteran's Welfare Fund has bought 300 thousand jars of canned meat. It appears, on flavoring qualities, special biologically albuminous characteristics meat of the Kyrgyz sheep and cattle is quite competitive. There are four places in the world where there is a production of such tasty and useful to health meat. It is Semipalatinsk area of Kazakhstan, one of Canada's regions, Mongolia, Kyrgyzstan.

Animals' diseases can affect the manufacture and trade in livestock products, use and exchange of Agricultural Animal Genetic Resources. Last years cases of animals' disease with brucellosis, echinococcosis, and tuberculosis have become frequent. So, on results of 2002 it is revealed more than 100 centers or nidus of infection on brucellosis, echinococcosis prevalence has achieve up to 55 % among sheep, 38.7 % - among cattle, in 1991 - accordingly 35.6 % and 24.8 %. Allocated budgetary funds provide up to 70% of veterinary service requirement for vaccination carrying out and other preventive measures. The Scientific Research Institute of live-stock breeding, veterinary science, pastures develops diagnostic and preventive preparations from these diseases, the complex program of control measures and concrete projects with terms, calculations. However the shortage of means constrains rate of their development. Projects on live-stock breeding recovery from echinococcosis need 324 thousand dollars (\$), struggle with brucellosis - 341 thousand dollars (\$), tuberculosis - 149 thousand dollars. Search of donors is conducted.

2.3 Development of future national policy, strategy and plans to manage Agricultural Animal Genetic Resource conservation, use and development

In republic there is a clear understanding of axiom that development of all livestock branches is impossible without adjustment of selection-breeding work. The lack of financial assets is an objective braking factor. The state budget now cannot allocate significant means. National investors have not saved up sufficient capital yet for an investment in Agricultural Animal Genetic Resources development. It is necessary to create a favorable investment climate to involve investments of foreign donors by improvement of legal base, promulgations of the Governmental attempts to develop Agricultural Animal Genetic Resources (AAGR). In this connection the decision on updating of old Law of the Kyrgyz Republic "On livestock breeding business of the Kyrgyz Republic" (enacted in 1992) has been made with the purpose to bring to conformity with present realities.

Development of live-stock breeding is impossible without issues decision on pastures improvement, which comprise 9.0 million hectares. The Law "On pastures" has been drafted, however because of financial

neediness the project has been inhibited. During Soviet time 1.5 thousand well and spring constructions, 1.6 thousand km of water supply systems for cattle watering places which cost 10 million, has been constructed on 9.0 million hectares of pastures. Now they are inhibited and require repair measures.

By the end of 2003 it is provided to complete drafting of the project Concept on agrarian policy of the Kyrgyz Republic. It is supposed to draft the Strategy project on conservation, use and development of Agricultural Animal Genetic Resources and also a National plan of action on its realization after its approval or in parallel. Joint financial realization sources of these program documents plan the budget of the republic, means of foreign and national investors, budgets of local authorities and communities. Development will be carried out by the Ministry of Agriculture and water industry (Minselvodprom) in cooperation with the Ministry of Finance, State Forestry service in which responsibility there are issues of biodiversity preservation, the Ministry of Education and culture and other concerned departments.]

The question on genetically changed organisms' precaution is actual. In the country for present time official documents on formulation of the attitude to these products is not accepted. In republic there are still no products with the rule of modified products marks accepted in Europe. Nevertheless, the republic prepares process on Genetically Modified Products Convention ratification. In the National review to RIO+10 "The Promotion assessment results of the Kyrgyz Republic to sustainable development", 2002, the requirement to adhere to the international Code of risks analysis, careful check of modified products for their probable conflicts to natural products, preference while to traditional products is expressed during the new products assessment and national biotechnologies development.

Measures on international cooperation development are taken with a view of modern biotechnologies attraction for improvement of Agricultural Animal Genetic Resources use; researches on genetically modified organisms' and fodder use and application consequences. In 2002 mission from Technical University of Munich under the direction of the professor, Dr. G.Ventselja has visited the republic with the purpose to organize mutually beneficial cooperation in the field of biotechnology. Mission was provided with all scientific bases on biotechnology, selection, meetings at the Government level were organized. However, business did not move farther than multipromises and intentions. Searches will be continued. Offers and proposals on interchange by scientific technologies, as well as on Agricultural Animal Genetic Resources are included in projects agreements on cooperation development in the field of agriculture with Russia, China and Europe countries.

Section 3. National capacities status assessment and priorities identification in the area of Agricultural Animals Genetic Resources (AAGR) conservation

3.1 National opportunities and priorities

Institutional participants in livestock development, except for commodity producers, are the Government of the republic, scientific research institutes (SRI), associations and non-governmental organizations (NGOs), private breeding and veterinary service companies as well as institutions of local government.

Share of participants in Agricultural Animals Genetic Resources development

Participants	Legislation	Strategy	Animals registration	Insemination Center	Genetic assessment
Government of KR	3	3	1	2	1
Local self-authorities	2	2	1	2	1
Producers	2	2	2	3	1
Private companies	2	2	2	2	1
NGO/private companies	2	2	2	2	2
Research institutes	2	3	2	3	3

Score estimation from 1 up to 5 (1-no participation, 2-small participation, 3-regular participation, 4-5-high degree of participation)

Working out of policy and strategy of livestock development, approval and passing of statutory legal acts (laws, resolutions, concepts, etc.), the control over veterinary condition and customs - quarantine service, inspection of breeding work is carried out by the Government of the republic with participation local government institutions, non-governmental organizations, scientific research institute. Only the part of breeding herds of animals practically is exposed to registration of animals and private breeding Service Company, scientific research institute of livestock, some pedigree Funds on breeding cultivation are engaged in these activities on registration. But since animal registration is connected to significant charges, the most valuable part of breeding herds is exposed to breeding registration only. Artificial insemination is carried out on a regular basis mainly in large-scale enterprises in cattle breeding and sheep breeding. Private centers of artificial cows insemination are organized by forces of local government institutions for small-scale enterprises, in villages and breeding service companies. But such kind of centers, by virtue of financial assets limitation and necessary equipment absence, are organized not everywhere, therefore, natural coupling with casual low-productive breeders is used in many places. The genetic estimation of breeders is carried out under the management of scientists - selectors in leading breeding factories.

Taking into account huge value of livestock in economy development of the republic, the priority direction (tendency) of breeding livestock in perspective should be developed. For this purpose it is recommended to restore state breeding base and service, consider at the governmental level a question on conservation and the further development of animal genetic resources in the republic, render state support to all breeding farm and economical entities, cooperative societies and farms, irrespective of property form. It is also recommended to create at the Ministry as a separate structure the republican breeding inspection with functions of execution the Law of the Kyrgyz Republic "On breeding business", publications of state breeding books, catalogues, organizations of exhibitions, auctions together with private structures, development of every possible instruction on all issues of breeding affair. To organize work on creation of farmers associations on breeding of one or another cattle breeds, to increase a role of scientists and selectors on perfection of existing and creation of new highly productive breeds, types, animal families as well as a creation of the state stimulating conditions for them.

Priorities on breeds and systems the are following

Cattle types	Industrial system	Small system
Cattle:		
Alatau	x	x
Crosses with local cows		x
Aulieatinskaya	x	x
Black-motley	x	x
Yaks	x	
Sheep:		
Kyrgyz fine-fleeced	x	
Tyanshan fine-fleeced	x	
Alai semi-coarse-haired		x
Coarse-haired fat-meat		x
Crosses (hybrids)		x
Goats:		
Kyrgyz wooly	x	x
Kyrgyz downy	x	x
Horses		
Newkyrgyz	x	x
Kyrgyz local		x
Orlov (Orlovskaya)		x
Russian-trotter		x
Thoroughbred riding		x
Pigs breeds:		
Large (big) white	x	x
German generous (noble)		x
Landrace		x
Agricultural poultry:		
Hens – Kyrgyz breed	x	x
Leghorns		x
Kornish		x
Ducks – Peking (Pekinese) cross “medeo” (meadow)		x
Geese white big		x
Turkeys		x

All-round cattle meat development in mountain zones of the republic is a perspective direction for non-polluting meat production with maximal use of cheap pasturable fodders which could become the export goods for realization in foreign countries under lower price. In its turn, it causes strengthening of attention to work on meat animal breeds' conservation and development. Financial providing is necessary for this purpose, namely for purchase and duplication of meat animal breeds, first of all of best of world cattle breeds, horses and sheep; long-term credit should be allocated to associations, companies, big farms on meat production and export.

The program on conservation and further Agricultural Animal Genetic Resources development has not been accepted in the republic till this moment, coordination body and farmers' organizations (association) on breeding and conservation of animal genetic resources are not created. There was an attempt to create the biotechnological center on animal reproduction and genetics. Unfortunately for the lack of necessary financial assets and equipment, it does not function.

The created Agrarian science and consulting services center under the Ministry of agriculture, water resources and processing industry is not capable to organize seminars and consultations for farmers, issue booklets, recommendations, state breeding books, instructions on animal genetic resources development, as well as send scientists, experts to work with farmers because of finance limitation.

Priorities for Agricultural Animals Genetic Resources concerning required decisions are the following:

#	Requirements (needs)	Required decision		
		Urgent	Average	Long-term
1.	Financial providing	+		
2.	Creation of Agricultural Animals Genetic Resources database		+	
3.	Program acceptance on Agricultural Animals Genetic Resources conservation and development in the republic	+		
4.	Support of farmers, scientists - selectors in work on conservation and creation of new animals breeds, types, groups, lines, families	+		
5.	Associations creation on breeding each supurate animal breed		+	
6.	Companies creation on livestock and export production		+	
7.	Innovations and introductions of science achievements on Agricultural Animals Genetic Resources development			+

With a view of management opportunities expansion of Agricultural Animals Genetic Resources, for example, on estimation and definition breeds characteristics, conservation methods, animal breeding and genetics, it is necessary to count as a priority finding of financial (investment) means by scientific institutes on Agricultural Animals Genetic Resources and farmers, as well as a decision of organizational questions at Governmental level of the republic. There are the statutory acts establishing sanitary standards in attitude to Agricultural Animals Genetic Resources, including statutory acts on quarantine. It is necessary to establish a rigid control over delivery of different animals, poultry breeds and breeders sperms to the republic.

Conclusion of agreements with other research institutes of other countries on Agricultural Animals Genetic Resources conservation is a good opportunity. There is only a preliminary intention on information exchange and joint approbation of new brown dairy cattle breed between Kyrgyz scientific research institute of livestock and the Research institute of livestock technology of Kazakhstan Republic, which has not been authorized yet by the higher organizations, and the Government of both republics.

Now, the basic scientific researches on Agricultural Animal Genetic Resources are conducted in scientific research institute of live-stock breeding, veterinary science and pastures, Kyrgyz agrarian university (KAU), Institute of biochemistry and physiology of the National academy of sciences. Training of students is carried out on two KAU faculties - zooengineering and veterinary. We shall notice that KAU has been formed as zooveterinary institute in 1938. For the last 10 years 779 zooengineers, 514 veterinaries have been graduated from these institutes. In the long term, the main establishments and organizations working in the spheres of research, establishment, training and development of Agricultural Animals Genetic Resources policy, can be: the Center of agrarian science and consulting services at the Ministry of agriculture and water resources, Kyrgyz scientific research institute of livestock, veterinary science and pastures, Kyrgyz agrarian university, Rural consulting service and Central Asian breeding service LTD, which work now is separated.

It is necessary to create republican breeding service, the Coordination center under the Ministry of Agriculture and water resources in order to conduct strategy and policy directed on Agricultural Animals Genetic Resources conservation and development successfully.

3.2 National priorities concerning animal species and breeding conservation

For each country animals that adapt for conditions of inhabitation are inherent and give good productivity. Kyrgyzstan is a mountainous and agricultural animal country, breeding and used by the population, adapted to severe breeding conditions. All breeds, which are bred in Kyrgyzstan, represent irreplaceable genetic value, as the survival of other breeds here is almost impossible.

The present quantity of breeds requiring for conservation:

1	Quantity of breeds (species) adapted to local conditions on the brink of risk		
	2	Insitu in natural condition	Exsitu in artificial condition
3	4	5	6
<u>Sheep</u>			
Tyanshan	224.6	224.6	-
Alai	74.8	74.8	-
Australian merino			
Aulieatinskaya	87.3	87.3	50.0 thousand of spermatozoa
Total	969.5	969.5	450.0 thousand of spermatozoa
Local Kyrgyz horses			
<u>Yaks</u>	17.3	17.3	
<u>Kyrgyz local</u>			-
<u>Kyrgyz hens breed</u>	80.0	80.0	-

Today's situation on conservation of some genetic resources animal species in the Kyrgyz Republic demands urgent measures, starting from establishment of breeding and pedigree account, regular release of catalogues and registers on the best breeding animals, organization of mass advertising and finishing with approval of necessary statutory legal acts.

All over the world the livestock breeding activity is conducted by branch and pedigree associations or federations, which are responsible for destiny of this or that breed. Such kind of structures only appears in Kyrgyzstan.

Critical situation on loss of Alai breed genofund of fat-meat sheep with semi-coarse haired carpet wool was established. The unique breeding factory was disbanded and the base of thoroughbred breeding of these sheep was practically liquidated. Nobody works with farms, purchasing of carpet wool is not arranged and its production does not give any guarantee of benefit for the producer. Therefore Gissar or local fat-tail rams cover this breed on places. The same picture was with tyanshan semi-fleeced sheep breed. There are only 4500 thousand of sheep heads on the only breeding factory on sheep breeding of this breed. There are no funds on breeding reproduction expansion. The basic sheep livestock is concentrated in hands of private owners, in the case of their crossing with rams of other breeds will lead to the loss of breeds.

The similar picture is observed in breeding of aulieatinskaya breed of cattle and local population of the Kyrgyz horses. Aulieatinskaya cows are crossed with bulls of other breeds, local Kyrgyz mares with stallions of new-kyrgyz breed. Though their amount totals 78-80 thousand of heads, they can disappear quickly if urgent measures will not be taken. It is necessary to relate Kyrgyz breed of hens and local grey as well as white turkeys to number of breeds taking place on the verge of risk. First of all it is necessary to create even small relic farms, breeding Kyrgyz hens and Kyrgyz turkeys for their conservation.

In general for all sheep breeds, cattle, horses and birds the principle of relic farms creation should find obligatory form. It is impossible to keep those few populations which are scattered all around the country and which can disappear if such measures will not be taken, without such kind of structure.

In cattle breeding the issuing of state breeding books, catalogues of bulls – breeders available in the Kyrgyz Republic shall be renewed. In horse breeding there is a tendency of mass horses delivery of thoroughbred riding breed which number on the rough data achieves 1200 heads. For work with this breed it is necessary to pay special attention as they basically are brought from Russia. The governmental document regulating a principle of agricultural animals' delivery with obligatory quarantine hold (interval) is

necessary. The above-mentioned State program of horses breeding development foresees drawing up and edition of catalogues, passports, and certificates on sold horses confirming pedigree belonging in origin. The same principle should be distributed on delivered horses as well.

Realization of high-grade work of branch associations should begin with inspection of agricultural animals and birds' genetic resources. Such kind of work has not been carried out since 1991. Now the state attestation of breeding farms is carried out. Processing of this material will allow to establish available breeding contingent of agricultural animal owners on hands of the different property. However this work is narrow and it naturally has not captured the whole republic, but only those farms, which applied for attestation.

Especially it would be desirable to note uniqueness of Kyrgyz yaks. They are half-wild; these animals do not demand anything, except for keeping. There are 17.3 thousand heads of Kyrgyz yaks in the country. Yaks, concentrated in small groups, demand constant attention of yaks breeding association. Closely related inbreeding increases without strict work on bulls account in herds, it leads to decrease of body sizes of a body and deterioration of adaptive qualities of each population. Therefore it is necessary to carry out obligatory annual exchange of bulls - breeders. As practice with commodity producers' contracts shows, everything turns on lack of money resources. The corresponding business - project was prepared for investments attraction, search of donors is conducted.

Having studied condition of agricultural animals breeds, the following circuit of participants attracting is offered to manage programs on conservation:

Chart of participants attracting to management under programs on conservation

Participants	In situ	Ex situ
Government of the Kyrgyz Republic	2	3
Association of producers	5	5
Private companies	5	5
Scientific research institute	3	2

Score estimation from 1 up to 5 (1-no participation, 2 small participation, 3-regular participation, 4-5-high degree of participation).

Associations of producers and private companies should be interested in preservation and perfection of disappearing breeds of sheep, cattle, horses and birds not only in a natural condition, but they are obliged to support in creation of genetic banks of semen and zygotes of highly valued animals breeds which should be concentrated in arsenals of scientific research institute and Associations. In the case when there is no opportunity to deliver live breeding material, it is necessary to achieve maintenance with material ex situ.

The development of the state programs on conservation of valuable disappearing animals and birds, for each species and breeds is the mechanism of program's action on animal genetic resources and condition creation for interest call of associations' participation in programs on Agricultural Animals Genetic Resources conservation.

Requirements priorities for technologies use for programs in situ

Technology	Knowledge	Training	Financial resources	Organization of production
Registration	2	2	5	2
Genetic assessment	3	3	5	4
Insemination centers	4	4	5	2
Molecular technology	2	1	1	1
Techniques of livestock production	2	5	5	3

Score estimation from 1 up to 5 (1-no participation, 2 small participation, 3-regular participation, 4-5-high degree of participation).

Registration of disappearing breeds, animals' species is the beginning of programs realization. There are more than enough trained people with knowledge of organization production to carry out this work. There is a lack of experts in genetic estimation and who can train interested commodity producers. Genetic estimation is closely connected to section registration. For animals' estimation, it is necessary to be able to define breed, it is also necessary to have experts and knowledge. Therefore employees of associations have to be supplied on a regular basis with corresponding instructions breeding animals appraisal, trained to make catalogues and registers, start breeding cards and factory books, prepare materials for state factory books making. Application of artificial insemination is a pledge of quality production expansion of this or that cattle-breeding production. Therefore it is necessary to create genetic bank of risk breeds in each region. For this purpose it is necessary to restore state breeding oblasts' and regional stations, with the appropriate technological equipment and to provide it with experts. Application of molecular technology in Kyrgyzstan at the present stage is counted premature. First of all, it is necessary for our experts to expand application of artificial insemination by breeders' sperm of disappearing breeds and to bring to perfection embryos transmission. It will allow to increase quantity of rare animals in short term and to order a level of breeding work conducting with them.

Breeders' semen accumulation, creation of the paternal and maternal base necessary for intrapedigree reproduction, mobilization of financial assets and purchase of the equipment process for semen and zygotes storage can serve as priority directions of activity on opportunity expansion development and realization of programs on animals and birds genetic resources conservation that are on the verge of risk,.

The Kyrgyz Republic has trained staff for carrying out artificial insemination and farms organization of different structure. Financial resources are necessary for work.

Section 4. Recommendations to strengthen international cooperation in the field of Agricultural Animals biodiversity

Now, the realization of joint (cooperative society "Kyrgyz association of sheep breeders and goat breeders" and German technical center "GTC") of the pilot project "Assistance in Kashmir fiber production" is started. The purposes of the project include profit gaining due to goat down (Kashmir) marketing in the countries of Europe and China with leading of down quality up to world standards and creation of thoroughbred Kyrgyz downy goats' population. In September of 2002, forty (40) heads of goats - breeders of the Orenburg goat breed were purchased in the Orenburg area of Russia, coupling company with local breeds was carried out and increase with improved genetic potential was received as well. In August of 2003, in Mongolia 70 heads of goat dams and 30 heads of goats – breeders of Mongolian Kashmir breeds for the project purposes were purchased. It is recommended, on the basis of results of the pilot project, to expand the international interchange by genetic resources of downy goat breeds.

The purchase of semen material of the best world bulls - breeders used of brown shwizc and golshtine breeds of cattle for its genetic improvement, centers of artificial insemination were created is conducted within the framework of Kyrgyz-Swiss agricultural project through created private organization - "Central-Asian breeding service LTD.". It is recommended to continue this perspective direction of the international cooperation on improvement of cattle livestock genofund through participation expansion nongovernmental private organizations.

290 rams and 400 ewes of Australian merino ("fine", "superfine", "medium", "strong" of types from 18 farms of Australia, frozen semen from Australia (from rams of rambulye type) and New Zealand (rafter-7 type) were delivered into the republic within the framework of "Sheep breeding development" project with the purpose of wool quality improvement of Kyrgyz fine-fleeced breed of sheep as well as thoroughbred breeding in 1998, with a credit support of the World Bank. We shall note that during the Soviet Union period of time within 25 years there was a delivery of the Australian rams, but in small size as well as from Australian farms. Supervision and the analysis of 4 year interactions of "genotype - environment" show a good acclimatization degree of the Australian delivered breeds in conditions of Kyrgyzstan. It is recommended to begin their export to other countries.

For Agricultural Animals Genetic Resources development delivery of highly productive bulls-breeders semen, pedigree (breeding) heifer, equipment for artificial insemination centers, incubatory eggs of productive cross-lines of broiler and good laying hens' breeds, horses of English thoroughbred, Don and draught breeds is possible from Russia

There is a weak scientific-technical and technological base of researches in area of Agricultural Animals Genetic Resources in the republic. It is recommended to develop international cooperation with the purpose to attract modern technologies, experience in area of Agricultural Animals Genetic Resources in the republic. In the advanced countries with developed animal industries, lots of effective methods of genetic animal estimation, electronic account of pedigree and breeding cattle, which during the Soviet Union have been adjusted, were developed and should be again introduced into practice of domestic animal industries. Knowledge of molecular technology in the republic is insufficient, besides there are no necessary conditions for researches in this direction (laboratories, equipment, and qualified experts). There are available knowledge and practical experience in the field of artificial cattle insemination, however in this direction financial and organizational support, and on technology - embryos transmission are necessary, devices and equipment are necessary in addition.

Conclusions

Historically livestock in the Kyrgyz Republic is a priority branch and makes 42.5 % from gross national product of agriculture. The basic developing directions of livestock breeding are sheep breeding, cattle breeding, horse breeding, goat breeding, poultry farming, pig breeding, yak breeding, etc. Activity admits as The Government of the republic recognizes activity in area if Agricultural Animal Genetic Resources strategically important for the country and it is supported with necessary political, organizational, economic actions. However, because of lack of budgetary funds the Government is no able to put big financial investments in development of this branch and as well in Agricultural Animal Genetic Resources Agricultural Animal Genetic Resources.

Private, cooperative and state farms, associations were created during agrarian - land reform. The basic animals' livestock of animals is in private and co-operative farms. The production efficiency of all these economic entities is various on directions, but as a whole each of them has no special advantages. About 227 big state and fine farmer breeding farms function in the area of Agricultural Animal Genetic Resources, from them 6 basic - on cattle breeds' reproduction, 6 - on sheep breeds reproduction, 3 – on horses breeds reproduction.

The basic animals and birds species and breeds are totaled in following: cattle - 3 breeds, sheep - 6, goats - 4, horses - 4, pigs - 4, hens - 5, ducks - 1. In the country the certain work on Agricultural Animal Genetic Resources is conducted. The Government of the republic approves a number of normative (statutory) legal acts, programs; insignificant budgetary funds are allocated for their realization. But problems still remain. It is lack of financial and technical means, ground lands, last debts of breeding factories which cause problems of the second plan - infrastructure lack of development, especially training of new breeding farms to modern technologies, international cooperation, pedigree (breeding) farms' associations, etc. Investments and technical donors assistance are involved in view of their stage-by-stage decision. Thus, "Sheep breeding development" project was realized on credit of the World Bank, the Government of Switzerland rendered technical assistance for creation of "Central-Asian breeding service LTD." private company, the negotiations with Russia, Germany and other countries on cooperation organization are conducted.

It is necessary to develop and begin realization of conservation program of animals breeds that are under threat of loss – Alai sheep breeds, Tyanshan fine-fleeced sheep breed, Aulieatinskaya cattle breeds, local population of Kyrgyz horses, yaks the Kyrgyz hens breed and local grey, white turkeys.

Development and acceptance of the republican program on conservation, use and development of Agricultural Animal Genetic Resources, with allocation of budgetary funds, investments planning, means of communities and the associations, new edition of the Kyrgyz Republic Law "On breeding business", organization of the state breeding service with putting on it executor functions of above-named programs and the Law are urgently recommended for complex decision of named problems. In the intermediate term plan - creation of a databank on Agricultural Animal Genetic Resources, associations on animals breeding, private companies on producing and export of breeding animals production, organization of international cooperation with the purpose to attract the best practices, technologies, investments, training, interchange of Agricultural Animal Genetic Resources, export sale of breeding animal production are recommended.

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